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## Duration of Leave and Resident Fathers' Involvement in Infant Care in Australia

*This article uses time-diary data from the Longitudinal Study of Australian Children (LSAC; N = 2,157 weekday diaries; N = 2,110 weekend diaries) to examine differences in infants' time with a resident father at age 4–19 months according to fathers' duration of leave around the birth. Results showed that those infants whose fathers took 4 weeks' leave or longer spent no more time with their father than did infants whose fathers took a shorter leave or no leave. We observed a positive association between any leave and sole father care on weekend days but not weekdays. The findings suggest that moderate increases in leave duration may not promote greater father involvement in Australia.*

There is increasing recognition among family researchers and practitioners that fathers play a

vital role in children's well-being and outcomes (Lamb, 2004). No longer perceived solely in terms of the provision of economic support, fatherhood in Western societies increasingly includes the social, emotional, and physical care of children (Yeung, Sandberg, Davis-Kean, & Hofferth, 2001). The extent of father presence and engagement have been considered important influences on child development (Lamb, 2004), relationship quality (Snarey, 1993), and gender equality in families (Bianchi, Robinson, & Milkie, 2006). Such findings raise questions about the determinants of fathers' engagement in parenting, including whether and to what extent leave-taking behavior around the time of a birth influences that engagement.

The use of leave and its duration could have long-term effects on within-family allocation of care if time spent with a newborn enables fathers to develop closer emotional bonds with their child as well as skills and confidence as a caregiver (Tanaka & Waldfogel, 2007). In line with ideas about the ongoing construction of gender, a period of leave devoted to parenting may provide lived experience that contributes to the reshaping of notions of fatherhood, with implications for the longer term gender distribution of child-care labor (Haas & Hwang, 2008). Empirical research to date has provided some supporting evidence indicating that the more time fathers spend caring for infants, the more time they spend with those children when they are older (Aldous, Mulligan, & Bjarnason,

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1998). Recent analyses extending the focus to the use of paternal leave taking include studies of the United States (Nepomnyaschy & Waldfogel, 2007) and the United Kingdom (Tanaka & Waldfogel, 2007) that identify a significant relationship between fathers' leave around a birth and subsequent involvement in infant care.

In this article, we investigate the impact of individual fathers' leave-taking behavior in the Australian parental leave policy context of 2004–2005, when Australian parents had no access to legislated paid maternity, paternity, or parental leave but—subject to eligibility restrictions linked to employment contract and tenure—were entitled under federal legislation to 52 weeks' unpaid leave (termed *parental leave* in legislation) that could be shared between parents. Except for 1 week at the time of the birth (termed *short paternity leave*), parents could not take this leave concurrently, and none of the leave was set aside for fathers on a use-it-or-lose-it basis. Some fathers had access to paid paternity leave from their employer—typically for a period of 1 or 2 weeks and most often in the public sector. In this context, most Australian fathers did not take formally designated paternity or parental leave at the time of the birth of a child; however, most did take some leave to assist with parenting tasks, typically for a relatively short period (up to 4 weeks), and most commonly drew on other leave entitlements, principally paid annual leave (Whitehouse, Diamond, & Baird, 2007). This pattern is unlikely to change rapidly. Although the Australian government recently announced the introduction of the 18-week Paid Parental Leave Scheme, the policy will not commence until 2011, and paid paternity leave will not be introduced at this time (Australian Government, 2009).

The frequency and duration of fathers' leave taking in Australia is more commensurate with the United States and United Kingdom than with countries with extended, paid leave schemes such as Sweden (see Haas & Hwang, 2008; Nepomnyaschy & Waldfogel, 2007; Tanaka & Waldfogel, 2007), and the policy regime is closest to the United States, which similarly provides only unpaid leave. Findings from Australia consistent with the U.S. and UK studies referred to above would strengthen the evidence that even short leaves around the time of a birth are important in affecting fathers' involvement in child care. Such leave, even if not designated formally as paternity leave, may

provide the opportunity for fathers to form strong emotional bonds with their child, may encourage greater involvement in the care and upbringing of the child, may allow fathers to develop parenting skills and identity, and may establish a shared division of child-care labor with the mother that may be maintained to a greater extent than would be possible with no leave. Thus, in the following analysis, our concern is with the duration of leave that fathers take at the time of the birth of a child rather than whether they accessed formally designated paternity leave.

Our aim is to build on earlier research from the United States and United Kingdom, countries where fathers' leave-taking behavior is broadly comparable with patterns of leave usage in Australia and that are also frequently labeled “liberal welfare regimes” (Esping-Andersen, 1990). We examine the association between fathers' leave and their involvement in infant care using Wave 1 and Wave 1.5 of the Longitudinal Study of Australian Children (LSAC), a large, nationally representative survey. Our analysis uses detailed time-diary data. We are not aware of any other study that has used time diaries to investigate the association between fathers' leave and involvement in child care. Previous studies have measured father care using fathers' self-reported behavior on a series of stylized questions (Haas & Hwang, 2008; Nepomnyaschy & Waldfogel, 2007; Tanaka & Waldfogel, 2007). Time diaries are widely viewed as the preferred method for measuring time, as respondent answers are less affected by social desirability bias and recollection error (Bianchi et al., 2006; Pleck & Masciadrelli, 2004).

In LSAC, the time-diary component of the survey was designed to record the activities and care an infant received. The infant's mother, who remains the primary caregiver in most Australian families, completed most diaries. Previous research has shown that mothers give lower estimates of father involvement on stylized parenting questions than do fathers (Coley & Morris, 2002; Mikelson, 2008). Yet it is not clear whether this reporting bias similarly affects time-diary surveys. Previous studies have also highlighted the difficulty of establishing “whether mothers underestimate fathers' involvement or whether fathers overestimate their own involvement” (Mikelson, 2008, p. 623). Given this ambiguity, we believe it is useful to investigate whether fathers' duration of leave around a birth is associated with father involvement, by

using the diary data mothers provided. Previous studies investigating the effects of leave on father involvement have all drawn on fathers' reports of father involvement (Haas & Hwang, 2008; Nepomnyaschy & Waldfogel, 2007; Tanaka & Waldfogel, 2007).

If we find a positive association between leave, regardless of whether it is formally designated as paternity leave, and fathers' involvement in child care, then this will suggest that leave taking has an effect at the individual level, perhaps by enhancing parenting skills and father-child attachment. The translation of such an effect into subsequent involvement with children, however, may be context dependent and most likely observed in countries with comprehensive paternity and parental leave policies, on the assumption that such policies affect the social construction of fatherhood and are likely to be complemented by other supports for men's involvement in child care. An association between leave taking and fathers' subsequent levels of involvement in child care in a country such as Australia, where fathers do not widely use paternity and parental leave, would suggest that leave taking provides an important means of encouraging father involvement independently of the policy context. As dedicated leave for fathers is clearly some way off in the Australian policy agenda, Australia provides one of the few contexts where this proposition can still be examined.

#### *Fathers' Involvement in Child Care*

A useful starting point for explaining variation in fathers' levels of involvement in child care is to differentiate between kinds of involvement. Lamb, Pleck, Charnov, and Levine (1985) identified three main components: (a) interaction, (b) availability, and (c) degree of responsibility. Interaction was the father's degree of direct contact through shared activities and caregiving. Availability was the father's level of accessibility to the child or presence, regardless of whether interaction is taking place. Degree of responsibility included arranging for the child to be taken care of and ensuring adequate provision of resources (Lamb et al., 1985). Most studies have focused on explaining variations in levels of father interaction and accessibility to children. Common findings were that fathers' time in paid employment is negatively related to their time spent on child care (Aldous et al.,

1998) and that men with more egalitarian gender attitudes were more involved in child care than men with traditional gender attitudes (Bulanda, 2004). There was little evidence that relative economic resources were related to fathers' or mothers' time with children, perhaps indicating that this kind of care work is not bargained or exchanged in the same way that has been found for housework tasks. Some research has suggested that more educated men spend more time with children, perhaps because of beliefs about the importance of cultivating children's social and human capital (Sayer, Gauthier, & Furstenberg, 2004), and that men spend more time with older children compared with younger children and with male children compared with female children (Harris & Morgan, 1991).

Only limited research has examined whether fathers' use of leave at the time of a birth affects subsequent levels of engagement in child care. There are several reasons we might expect fathers' leave at the time of the birth to affect subsequent levels of involvement. Spending time with a new baby may enable a closer emotional bond to develop between father and child, encourage the development of a sense of identity as an involved father, increase fathers' skills and confidence in child-care tasks and activities, and establish a shared division of child-care labor between fathers and mothers. As others have noted, though, the level of cultural, workplace, and institutional support for leave constrains whether men take leave at the birth of a child, and this may in turn also affect their ability to maintain involvement in child care after they return to work (Lamb et al., 1985). In countries with high levels of support for paternity leave, we might expect to find a greater correspondence between taking leave and continuing child-care involvement. Compared with countries with a liberal welfare approach to family policy, social democratic countries such as Sweden and Norway have a long history of support for universal family leave policies that support and encourage gender-egalitarian work-family arrangements. In these countries, it may be easier for men not only to take officially sanctioned leave at the birth of a child but also to translate this leave into continued involvement in child care as children grow older. Research in Sweden has tended to support this, with a recent detailed analysis of Swedish fathers working in large private companies showing that longer leave duration was positively associated with fathers'

participation in the care of resident children aged up to 12 years, drawing on measures that included taking solo responsibility, hours spent with children on a workday, and involvement in physical caregiving (Haas & Hwang, 2008).

There are also similar results emerging in analyses of regimes with more limited policy frameworks and shorter average leave durations among fathers. Nepomnyaschy and Waldfogel (2007), using data from the birth cohort of the Early Childhood Longitudinal Survey in the United States, revealed that fathers taking 2 or more weeks leave were significantly more involved in routine infant care of a 9-month-old than were fathers who took no leave, after controlling for a number of employment, family, and demographic characteristics. Similar associations were observed in a U.K. study of 9,592 infants (Tanaka & Waldfogel, 2007), which found that fathers who took some leave were significantly more likely than those who took no leave to be involved with activities such as changing diapers, feeding, and getting up at night. Thus, even in national settings where there is less formal paternity leave available and hence likely fewer workplace, institutional, and cultural supports for taking leave, men who take leave are able to maintain some level of involvement in child care.

Although the findings provide some support for the view that fathers' time with children during infancy may enhance the development of parenting skills and commitment, an alternative explanation for the significant findings is that fathers who choose to take leave differ in important ways from fathers who do not: for example, one possibility is that fathers who take leave do so because of a strong commitment to parenting that also involves a desire to develop a strong bond with their child or be involved in routine care activities. The U.S. study of Nepomnyaschy and Waldfogel (2007) addressed this issue by incorporating proxy measures of men's commitment to parenting (fathers' attendance of prenatal classes and presence at the birth) in their regression analysis. The UK study of Tanaka and Waldfogel (2007) assessed whether access to employer provided policies at the workplace influenced fathers' leave taking and was thus not simply a reflection of commitment to parenting. Although similar proxies for commitment or measures of policy variation by workplace are not available in the Australian data, our analysis does enable

examination of whether there is a significant association between fathers' use of leave and involvement in child care, with the detailed measures of time use available in our data set. Moreover, if we find an association between taking leave and subsequent father engagement in child care in Australia, then this would add further weight to the findings from other liberal welfare states and suggest that leave does not have to be defined specifically as paternity leave to affect subsequent levels of father involvement.

## METHOD

### *Data and Sample*

We took data in this article from Wave 1 and Wave 1.5 of the infant cohort of the LSAC. The infant cohort is a nationally representative sample of Australian children born between March 2003 and February 2004, drawn from an administrative database held by Medicare Australia, a statutory body. In Australia, universal state-subsidized medical care is administered through Medicare, which means that the database had very good coverage of the target population (Australian Institute of Family Studies [AIFS], 2007). The Wave 1 interview took place from March to November 2004 when the focal infant was aged between 3 and 19 months. The response rate was 57%, with 5,107 infants surveyed (AIFS, 2007). We use the term *infant* loosely to mean children aged up to 19 months, thereby including both true infants and young toddlers.

Wide-ranging data on the infant and family were collected in a face-to-face interview with the infant's primary caregiver. At Wave 1, mothers were the primary caregiver in 98.5% two-parent families. After the interview, two time diaries were left behind for the parent to complete on an assigned weekday and weekend day. The time diary divided a 24-hour period into 15-min intervals, and the caregiver was asked who the focal infant was with, where the caregiver was, and what activity the infant was doing in each interval. Data on both parents' leave were collected in the Parental Leave in Australia survey, conducted in Wave 1.5, which was mailed to parents in June 2005.

Our analysis uses data for infants who live with a mother and father. We applied three other sample exclusions. First, we excluded infants who had a resident father not employed at

Wave 1. Second, we excluded infants whose father was not employed before the birth, because leave from a job would not be relevant. We included fathers who had part-time hours in the sample. Third, we exclude infants living in a family where a parent entered their household after their birth. The final sample consists of 2,157 weekday diaries and 2,110 weekend diaries for 2,358 infants (2,356 lived with their biological father and 2 with a stepfather).

On the diary day, infants in our sample were aged 4–19 months. Although most time diaries were completed within 1 week of the main survey, some were completed 2–4 weeks later. Hence, some infants aged 3 months at the Wave 1 interview ( $n = 64$ ) would have been aged 4 months on the diary day. Also, the general-release data file publishes month and year of birth, not day, which has resulted in some imprecision when calculating age on the diary day.

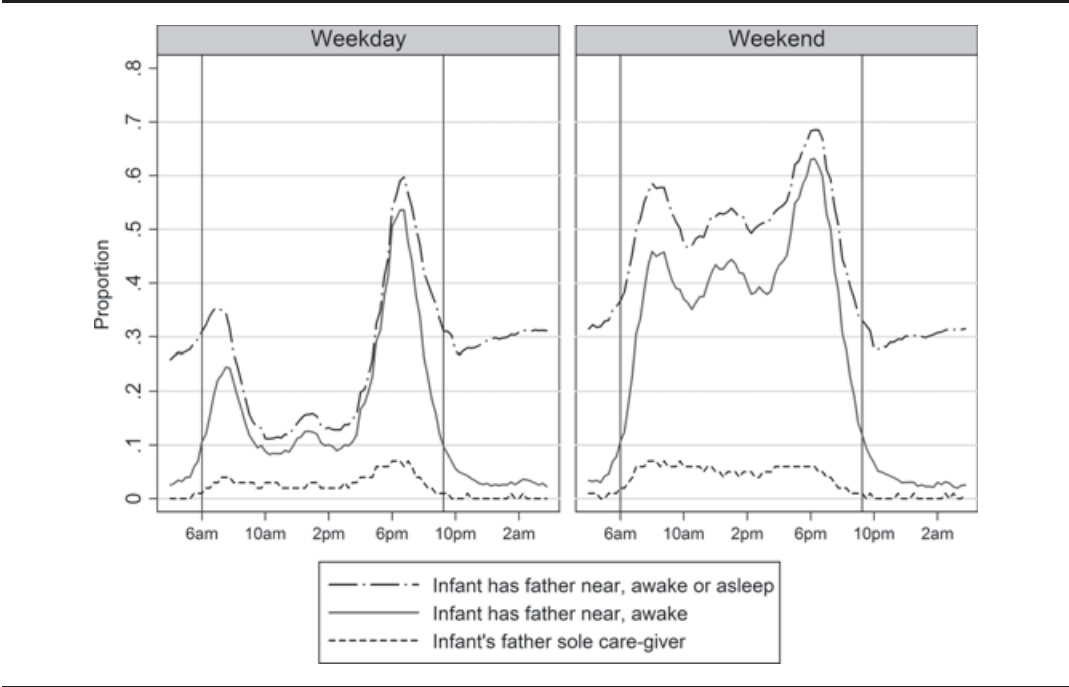
*Infant's Time With a Father*

The Wave 1 time-diary survey asked primary caregivers to record those persons “in the

same room, nearby if outside,” as the focal infant in 15-min intervals over 24 hours. Respondents were provided with the following categories: (a) alone; (b) mother; (c) father; (d) grandparent(s) or other adult relative(s); (e) brother(s), sister(s), other children; and (f) other adult(s). We focus on the time-diary information provided between 6:00 a.m. and 9:30 p.m. because infants spend much of this time awake and because the incidence of missing data increases after 9:30 p.m. We chose the particular time constraints after visually inspecting the data. Figure 1 plots the proportion of infants who had their father nearby at the given time of day. As expected, a high proportion of infants spent some time with a father in the early evening and a small proportion of infants were with their father across the standard hours of employment on a weekday. After 9:30 p.m. and before 6:00 a.m., the proportion of infants who had a father near remained steady at around 30%. We expect responses to largely capture differences in where an infant's cot is situated in a dwelling.

We use time-diary data to construct three measures of father involvement in infant care.

FIGURE 1. PROPORTION OF INFANTS WITH FATHER ACCESSIBLE AND PROPORTION WITH FATHER AS SOLE CAREGIVER BY TIME OF DAY ON A WEEKDAY ( $N = 2,157$ ) AND WEEKEND DAY ( $N = 2,110$ ).





The first measure is father presence, taken as the time an infant was awake and had the father near. We calculated hours an infant was awake and had the father near by summing the number of 15-min intervals an infant had the father near. This includes time an infant was with both father and mother. Our first dependent variable does not capture time a father was actively engaged in the care of an infant; rather, the measure combines time infants were engaged in activities with time a father was monitoring an infant. Although this measure conflates qualitatively different types of care, we argue that it provides important information on the time fathers were on call as a parent (Budig & Folbre, 2004). Yet we may still underestimate real accessibility where a father was in the home and, therefore, potentially available as a caregiver even when he was not present in the same room as an infant (Budig & Folbre, 2004). An additional issue is the treatment of time an infant was asleep but supervised by a parent (Budig & Folbre, 2004). We undertook preliminary analysis with a variable that retained time intervals an infant was asleep with the father near. This alternative specification of infants' time with their father did not alter our main findings.

Our second measure of father involvement examines time an infant was awake with the father near and no other adult, including the mother, near. The distribution of this measure is not normal, with a large spike at 0 and a long right-hand tail. We therefore collapsed infants' time in sole father care into four categories: (a) fewer than 30 min if an infant was in sole father care for one or two intervals of time, (b) 30–60 min if an infant was in sole father care for three or four intervals, (c) more than 1 hour if an infant was in sole father care for five or more intervals, and (d) no sole father care (the reference group).

Our third measure of father involvement in care examines time an infant received personal care from the father, with no other adult near. Personal caregiving activities include being bathed, dressed, having a nappy (i.e., diaper) changed, eating, and drinking (not breast-feeding). Again, this variable does not have a normal distribution. Here, we used a dichotomous variable coded 1 if an infant spent at least one 15-min interval in the care of the father, with no other adult near, and received personal care in that time interval. We did not use a more detailed measure because a low

percentage of infants received personal care from the father for more than 1 hour on the diary day (3.4% on a weekday and 4.5% on a weekend day).

Infants coded as receiving no sole father care or no personal care solely from their father could still have received intensive paternal care but in a context where the mother was also present. Our second and third dependent variables did not aim to measure the intensity of father caregiving; rather, our aim was to capture variation in the substitution of fathers' time for mothers' time as a caregiver.

For the sample used in this analysis, the focal infant's mother completed 96.2% of diaries; the father, 3.4%; and someone else, the remaining 0.5%. For most infants, the parent interviewed for the main survey completed the time-diary. A small number of fathers who were not interviewed did complete the diary. The validity of measures of father involvement that are based on mother reports has been questioned, with matched couple studies showing fathers tend to report greater paternal involvement than mothers for stylized questions about time use (Coley & Morris, 2002; Mikelson, 2008). Although we appreciate that mothers may not always give accurate data about father involvement, we believe that our regression analysis is unlikely to be biased for two reasons. First, the LSAC time diary focuses on the activities of infants, which means that primary caregivers were asked to describe the care their infant received on the diary day, not to evaluate how much they and their partner contribute to the care of their children. This style of question is less likely to lead to reporting bias because mothers are not primed to reflect on their own and their partner's parenting practices. Second, data were collected using time diaries, which are known to be affected less by reporting bias than stylized questions.

Around 40% of caregivers recorded time in the infant's diary on four or more separate occasions, and another 25% recorded the infant's day on two or three separate occasions. This increases our confidence in the accuracy of responses. Yet 19% of diaries were not completed until the next morning or later. Slightly more than 70% of diaries were taken on what the primary caregiver considered an "ordinary" day.

### Fathers' Leave

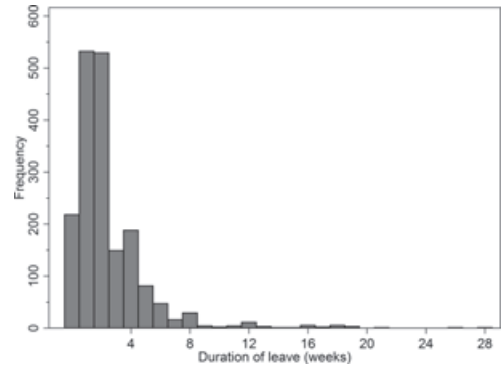
The key explanatory variable is duration of leave taken by the father around the birth of the focal child. Types of leave the father accessed at this time could include paid paternity or parental leave, unpaid paternity or parental leave, paid annual leave, paid sick leave, paid long service leave, other paid leave, and other unpaid leave (the survey did not separate paternity and parental leave because the Australian industrial relations system uses the two terms interchangeably). Slightly less than half of fathers who took some leave in our sample relied solely on paid annual leave (44%). The balance relied solely on paid paternity or parental leave (14%); unpaid leave (16%); another form of paid leave (6%); or two or more types of leave (20%), most commonly combining paid paternity with paid annual leave.

Duration of leave covers all forms of leave the father accessed around the birth of the focal child. For both substantive and practical reasons, we collapsed leave duration into categories. Theory has suggested that very short spells of leave around a birth may not lead to increased father involvement because the fathers would have more limited opportunities to practice the performance of routine child-care tasks. Furthermore, fathers' leave is skewed to the right (see Figure 2), and outliers might strongly affect analysis using a continuous measure. The categories of father's leave we use are (a) no leave, (b) less than 2 weeks (reference category), (c) 2 up to 3 weeks, (d) 3 up to 4 weeks, and (e) 4 weeks or longer.

In our sample, 22% of fathers took no leave around the birth of the focal child. Around 32% of fathers took less than 2 weeks leave, and most took more than 5 days leave. A further 22% took 2 weeks' leave and 6% took 3 weeks' leave. The remaining 17% of fathers took 4 weeks' leave or longer. Not surprisingly, fathers who drew on two or more types of leave tended to take longer spells of leave ( $M = 4.1$  weeks) than fathers who took paid annual leave only ( $M = 2.3$  weeks), unpaid leave only ( $M = 2.2$  weeks), or paid paternity or parental leave only ( $M = 1.4$  weeks).

Only five fathers (0.2%) in our sample were on paternity or parental leave the week before the Wave 1 interview. Another 64 fathers were taking annual leave, and 29 were away from work for other reasons. Unfortunately, the diary did not ask whether the infant's parents were

FIGURE 2. FREQUENCY DISTRIBUTION OF FATHERS' LEAVE ( $N = 1,839$ ).



working in a job on the diary day. Some fathers may have returned from leave between the main survey and the diary collection day, which is why we retain those observations in our analysis.

To check the robustness of our main findings, we repeated all analyses using a continuous measure of fathers' leave with a sample of infants whose fathers took some leave. To minimize the potential influence of outliers (see Figure 2), we used the square root of fathers' weeks leave in this supplementary analysis.

### Father and Mother Characteristics

For our regression analysis, we included a series of explanatory variables to account for the possibility that those aspects of fathers' employment that enable or constrain paternal involvement in infant care could also be correlated with father's access or willingness to take leave around an infant's birth. We also incorporated explanatory variables measuring differences in mothers' time allocation. All background measures of father and mother characteristics were collected in the Wave 1 interview. Unfortunately, neither the Wave 1 survey nor the Wave 1.5 survey collected information on parenting or gender role values.

Measures of fathers' type of employment included (a) weekly work hours; (b) regular evening or night work, measured with a dummy coded 1 where the father's job required evening or night work at least twice per week; (c) weekend work, measured with two dummy variables distinguishing whether the

father worked every weekend (termed *regular*) or worked on a weekend every 2 to 4 weeks (termed *irregular*); (d) self-employment, measured with a dummy coded 1 where the father works in his own business; (e) gross weekly income, in \$100s, and an associated dummy variable for item nonresponse; and (f) age, in years, as a proxy for career stage. We also included two dummy variables for fathers' education (diploma or certificate and degree or higher qualification, with no postsecondary qualification as the omitted category).

A maternal employment dummy variable was coded 1 for mothers who were working for an employer, self-employed, or working as an unpaid worker in a family business and not taking leave from a job (41.3%). Mothers who were not working in a job were not in the labor force (40.1%), unemployed (1.9%), on maternity or parental leave (13.4%), or away from work on other types of leave (3.4%). The high share of mothers not in the labor force is not a sample aberration; Australia has much lower maternal employment rates than the United States. Given the low incidence of maternal employment, we did not pursue a separate analysis of dual-earner families with detailed measures for mothers' type of employment. Among mothers who were in paid work or contributing to a family business, the majority worked part-time hours ( $M = 19$  hours per week,  $SD = 13$ ). Again, this is to be expected, as Australia has the second highest rate of part-time employment across industrialized labor markets (Organisation for Economic Co-operation and Development [OECD], 2007) and part-time work is especially common among Australian mothers with young children. We excluded mothers' education because it is highly correlated with fathers' education.

Our models included explanatory variables for breast-feeding and marital status. Breast-feeding practices may influence the allocation of mothers' and fathers' time in a household. The breast-feeding dummy variable was coded 1 for mother's breast-feeding the focal child at Wave 1 and coded 0 if the mother never breast-fed or had stopped breast-feeding before the survey. The control for marital status was coded 0 for parents who were legally married and coded 1 for parents who were cohabiting. Table 1 presents descriptive statistics for the explanatory variables.

### Control Variables

In all models, we controlled for several infant attributes found to be associated with father involvement (Pleck & Masciadrelli, 2004). The controls included age ( $M = 9.4$  months,  $SD = 2.6$ ), because father involvement may increase with the transition from infancy to the toddler phase of development, and gender (girls = 47.3%), because some research has suggested that fathers are more involved with sons than daughters (Pleck & Masciadrelli, 2004). Infants who have siblings may have less time with their father than a sole child if each child requires care specific to his or her particular needs or developmental stage. To allow for this possibility, we included dummy variables for one sibling (39.2%) and two or more siblings (20.5%). The omitted category was no resident siblings.

Finally, we incorporated controls for mode of survey completion in case there were systematic differences in data quality arising from variation in parents' recording practices. We added a dummy variable for whether the father completed the diary (3.4%). This variable was significant in all models, though this does not necessarily represent respondent bias, because fathers were asked to complete the time-diary when they were the primary caregiver. All models included a continuous variable for the number of time intervals with missing data (ranging from 0 to 12 intervals,  $M = 1.4$ ,  $SD = 2.7$ ). We added three dummy variables for timing of diary completion. These were completed on two or three occasions (25.2%), completed once on the diary day (13.3%), and completed after the diary day (9.9%), with the reference category being the completed diary four or more times on the diary day (42.6%).

### Analytic Strategy

To investigate whether there is an association between fathers' leave and time an infant is awake with the father near, our first dependent variable, we estimated a model using both ordinary-least-squares (OLS) regression and Tobit regression. Tobit regression accounts for left censoring of time at 0 and right censoring at 15.5 hours. The method of estimation did not affect our key findings. We present coefficients from OLS regressions because these can be interpreted with greater ease (Tobit results are available on request).



Table 1. *Means of Explanatory Variables in Regressions*

	Weekday		Weekend Day	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Father's leave				
No leave	0.22		0.23	
Less than 2 weeks (ref. cat.)	0.31		0.32	
2 weeks	0.23		0.22	
3 weeks	0.07		0.06	
4 weeks or longer	0.17		0.17	
Father's work hours (range = 3–100)	46.38	11.2	46.43	11.2
Father's nonstandard work hours				
Never work at night or work nights no more than once per week (ref. cat.)	0.60		0.60	
Work nights more than once per week	0.40		0.40	
Father's nonstandard work days				
Does not work weekends (ref. cat.)	0.39		0.40	
Irregular weekend work	0.36		0.35	
Regular weekend work	0.25		0.25	
Father's employment status				
Employee (ref. cat.)	0.77		0.77	
Self-employed	0.23		0.23	
Father's weekly income				
Weekly income (\$100s, range = 0–60)	9.66	7.6	9.68	7.6
Missing weekly income	0.13		0.13	
Father's age (range = 19–55 years)	34.16	5.2	34.15	5.3
Father's education				
No tertiary qualifications (ref. cat.)	0.22		0.22	
Diploma or certificate	0.43		0.43	
Degree or higher	0.35		0.35	
Mother's employment				
On leave or not in labor force (ref. cat.)	0.59		0.59	
Employed, not on leave	0.41		0.41	
Mother breast-feeding infant				
Not breast-feeding (ref. cat.)	0.53		0.52	
Breast-feeding	0.47		0.48	
Parent's marital status				
Legally married (ref. cat.)	0.87		0.87	
Cohabiting	0.13		0.13	
<i>N</i>	2,157		2,110	

Our second dependent variable, infant's time awake in sole father care, is a categorical variable. We used multinomial regression analysis to investigate predictors of sole father care, with the base category defined as infants who received no sole father care. Although our second dependent variable could be treated as ordinal, we used multinomial regression because we anticipated that some associations might be nonlinear. Our third dependent variable measures whether an infant received any personal care solely from

the father. This measure is dichotomous, so we used logistic regression.

In our regression analysis, the reference category for fathers' leave is less than 2 weeks' leave. We used postestimation Wald tests with a Bonferroni adjustment to test whether there were significant differences in father involvement between fathers who took no leave and fathers who took a longer leave. We estimated all models separately for weekdays and weekend days. Previous research has suggested that

predictors of father involvement on weekend days tend to differ from predictors on weekdays (Yeung et al., 2001). Variance estimates account for the stratified and clustered sample design using the *svy* commands in Stata.

RESULTS

*Infants' Time With Their Mothers and Fathers: Descriptive Findings*

Table 2 describes the overall pattern of maternal and paternal involvement in infant care in Australia. We summarize whether an infant spent any time with each parent and the amount of time with each parent, as well as whether an infant received any sole parent care and time with each parent without any other adult near. Not surprisingly, our analysis confirms that the care of a child aged 4–19 months was highly gendered in Australian couple families in which the father was employed. On average, infants were awake and had their mother near for 8 hours on a weekday or weekend day. In contrast, infants spent around 3 hours awake with their father near on a weekday. Time awake with a father increased to 6 hours on the weekend.

Although more than 90% of infants spent at least 15 min with their father near, only about one third (35%) received any sole father care. Mean hours an infant was awake with only the father near were low because many infants received no sole father care and because durations of sole father care tended to be short. Looking at our categorical measure of sole father care, we

observed that 14.7% of infants received fewer than 30 min of care; 8.7%, 30–60 min; and 12.5%, more than 1 hour on a weekday (results not shown in Table 2). On a weekend day, 14.9% of infants received fewer than 30 min sole father care; 8.8%, 30–60 min; and 20.9%, more than 60 min.

Table 3 presents OLS regression results predicting time an infant was awake with the father near on a weekday and weekend day. Our findings show that infants' time awake with the father near, with or without any other adult (e.g., the mother) present, on a weekday or weekend day was not significantly lower for those infants whose father took no leave than for infants whose father took 2 weeks' leave. Moreover, postestimation comparisons show that time with a father was not significantly less for infants whose father took no leave than for infants whose father took 2 weeks' leave, 3 weeks' leave, and 4 or more weeks' leave. Results from a model with leave specified as the square root of weeks leave likewise suggested that there was no association between time an infant had their father near on a weekday or weekend day and father's duration of leave in Australia (results not shown but available on request). In summary, infants whose father took some leave or a longer duration of leave did not appear to be spending more time with their father at age 4–19 months.

Next, we examine time an infant was awake with the father but no other adult (including the mother) near, using multinomial logit regression. Table 4 displays coefficient estimates, standard

Table 2. Percentage of Infants Who Have Any Time With Father or Mother Near and Mean Hours With Each Parent (6:30 a.m. – 9:00 p.m.) on a Weekday (N = 2,157) and Weekend Day (N = 2,110)

	Infant Any Time With Father		Duration of Time With Father (Hours)		Infant Any Time With Mother		Duration of Time With Mother (Hours)	
	%	SE	M	SE	%	SE	M	SE
All care, weekday								
Awake with parent near	91.0	0.62	2.9	0.05	99.7	0.11	7.8	0.05
Awake with only one parent near	35.9	1.08	0.4	0.02	93.4	0.52	4.5	0.06
All care, weekend								
Awake with parent near	96.3	0.42	6.0	0.07	99.9	0.08	8.1	0.05
Awake with only one parent near	44.5	1.04	0.6	0.02	77.2	0.91	2.3	0.05

*Note:* For time with fathers (mothers), “awake with parent near” refers to all time an infant has their father (mother) near. In contrast, “awake with only one parent near” refers to time an infant has only the father (mother) near and no other adult. Means include values of 0 for infants who spent no time with their father (mother) between 6:00 a.m. and 9:30 p.m. on the diary day.

Table 3. *OLS Estimates Predicting Time (Hours) an Infant Is Awake With the Father Near on a Weekday (N = 2,157) and Weekend Day (N = 2,110)*

	Weekday			Weekend		
	<i>B</i>	<i>SE B</i>	$\beta$	<i>B</i>	<i>SE B</i>	$\beta$
Father's leave (<2 weeks)						
No leave	0.25	0.15	.05	-0.34	0.18	-.05
2 weeks	0.04	0.11	.01	0.000	0.18	.00
3 weeks	0.27	0.21	.03	0.10	0.27	.01
4 weeks or longer	0.08	0.12	.01	-0.06	0.20	-.01
Work hours	-0.04	0.01	-.19***	-0.02	0.01	-.08**
Father's nonstandard work hours (≤ once per week or never)						
Work nights > once per week	0.10	0.11	.02	-0.28	0.14	-.05*
Father's nonstandard work days (does not work weekends)						
Irregular weekend work	0.34	0.12	.07**	-0.43	0.15	-.07**
Regular weekend work	0.32	0.13	.06*	-0.95	0.18	-.14***
Father's employment status (employee)						
Self-employed	0.11	0.14	.02	0.27	0.17	.04
Father's weekly income	-0.03	0.01	-.09***	0.02	0.01	.06*
Father's age	-0.005	0.01	-.01	-0.01	0.01	-.02
Father's education (no tertiary qualification)						
Diploma or certificate	-0.10	0.12	-.02	-0.23	0.17	-.04
Degree or higher	-0.11	0.14	-.02	0.03	0.18	.00
Mother's employment (on leave or not employed)						
Employed, not on leave	-0.03	0.10	-.005	-0.07	0.13	-.01
Mother breast-feeding infant (not breastfeeding)						
Breast-feeding	0.05	0.10	.01	0.25	0.15	.04
Parent's marital status (legally married)						
Cohabiting	0.36	0.15	.05*	-0.05	0.20	-.01
Adj. $R^2$		.12			.09	
$F(26, 245)$		8.04***			9.80***	

*Note:* Reference categories in parentheses. Regression model also controls for missing weekly income, infant gender, infant age, number of siblings living with infant, frequency time diary filled in, whether the father completed the diary, and number of missing intervals (omitted from table).

\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$  (two-tailed tests).

errors, and relative risk ratios for our key explanatory variable, father's leave (coefficients for all other variables available on request). On weekdays, we observed no significant association between father's leave and the likelihood an infant received any of the three periods of sole father care. Note that none of our postestimation Wald tests were statistically significant (not shown). On a weekend day, infants whose father took no leave were 40% less likely to have received more than 1 hour sole father care than

were infants whose father took less than 2 weeks' leave. Also, postestimation comparisons showed that infants whose father took 2 weeks' leave or 4 or more weeks' leave were significantly more likely to have received more than 1 hour sole father care on a weekend (1.9 and 2.2 times more likely, respectively) than were infants whose father took no leave ( $F$  statistics have probability of 0.004 and 0.001, respectively). Tests also showed that regression coefficients for fathers' leave did not significantly differ in equations

Table 4. Multinomial Logit Estimates Predicting Time in Sole Father Care on a Weekday (N = 2,157) and Weekend Day (N = 2,110)

No Sole Father Care (Reference)	Less Than 30 Min			30–60 Min			More Than 1 Hour		
	<i>B</i>	<i>SE B</i>	<i>e<sup>B</sup></i>	<i>B</i>	<i>SE B</i>	<i>e<sup>B</sup></i>	<i>B</i>	<i>SE B</i>	<i>e<sup>B</sup></i>
Weekday									
Father's leave (<2 weeks)									
No leave	−0.05	0.18	0.95	−0.19	0.23	0.83	0.05	0.21	1.05
2 weeks	0.09	0.18	1.10	−0.21	0.22	0.81	0.22	0.20	1.24
3 weeks	0.01	0.29	1.01	0.12	0.30	1.13	−0.07	0.31	0.93
4 weeks or longer	0.13	0.18	1.14	−0.03	0.23	0.97	0.27	0.21	1.32
<i>F</i> (78, 193)	3.86***								
%	14.7			8.7			12.5		
Weekend day									
Father's leave (<2 weeks)									
No leave	−0.08	0.18	0.93	−0.12	0.26	0.89	−0.61**	0.19	0.54
2 weeks	0.01	0.19	1.01	0.47*	0.21	1.60	0.04	0.16	1.04
3 weeks	0.20	0.26	1.23	0.31	0.33	1.36	−0.12	0.24	0.88
4 weeks or longer	0.26	0.22	1.30	−0.38	0.30	0.68	0.18	0.17	1.20
<i>F</i> (69, 202)	3.07***								
%	14.9			8.8			20.9		

Note: Reference category for father's leave in parentheses. Regression model also controlled for father's work hours, father's nonstandard work hours, father's nonstandard work days, father's employment status, father's weekly income, father's age, father's education, mother's employment status, mother breast-feeding the infant, parent's marital status, infant gender, infant age, number of siblings, frequency time diary filled in, whether the father completed the diary, and number of missing intervals (omitted from table). *e<sup>B</sup>* = exponentiated *B*.

\**p* < .05. \*\**p* < .01. \*\*\**p* < .001 (two-tailed tests).

predicting fewer than 30 min sole father care and 30–60 min sole father care (relative to no sole father care). Finally, among infants whose father took some leave, we did not detect any significant association between time in sole father care on a weekday or weekend day and the square root of fathers' weeks leave (not shown). Together, our findings suggest fathers' duration of leave did not have a large effect on their propensity to care for a young child without their partner near, although taking some leave did appear to be related to sole father care on weekends.

The third set of analyses examines whether an infant received any personal care from the father, with no other adult near, on the diary day. Table 5 presents results for our main explanatory variable, fathers' leave. Infants whose father took no leave were significantly less likely to have received any personal care solely from their father on a weekend day than infants whose father took less than 2 weeks' leave (reference category), 2 weeks' leave, or 4 or more weeks' leave (the second and third comparisons were derived from Wald tests). The odds of receiving

any personal care solely from a father were about 40% lower for infants whose father took no leave than for infants whose father took less than 2 weeks' leave. We found no relationship between a father not taking any leave and the likelihood an infant had received personal care from a father on a weekday. Finally, we did not observe any significant relationship between the length of fathers' leave and the likelihood an infant had received sole personal care from a father on either a weekday or weekend day.

Several aspects of fathers' employment appeared to structure infants' time awake with their father. Consistent with previous literature (Yeung et al., 2001), we observed a negative relationship between fathers' hours of employment and father involvement on weekdays. Not surprisingly, the predicted effect of fathers' work hours was less marked on the weekend. We found some evidence of a substitution of caregiving time from weekends to weekdays where a father participated in employment on weekends on an irregular or regular basis. Infants who had a father regularly involved in weekend job-related

Table 5. Logit Estimates Predicting Any Sole Personal Care From a Father on a Weekday (N = 2,157) and Weekend Day (N = 2,110)

	Weekday			Weekend Day		
	<i>B</i>	<i>SE B</i>	<i>e<sup>B</sup></i>	<i>B</i>	<i>SE B</i>	<i>e<sup>B</sup></i>
Father's leave (<2 weeks)						
No leave	−0.02	0.16	0.98	−0.53***	0.14	0.59
2 weeks	0.15	0.15	1.16	0.17	0.13	1.19
3 weeks	0.19	0.20	1.21	−0.21	0.20	0.81
4 weeks or longer	0.19	0.16	1.21	−0.01	0.14	0.99
<i>F</i> (26, 245)	4.18***			4.32***		
% receiving any personal care	24.5			31.8		

Note: Reference category for father's leave in parentheses. Regression model also controlled for father's work hours, father's nonstandard work hours, father's nonstandard work days, father's employment status, father's weekly income, father's age, father's education, mother's employment status, mother breast-feeding the infant, parent's marital status, infant gender, infant age, number of siblings, frequency time diary filled in, whether the father completed the diary, and number of missing intervals (omitted from table). *e<sup>B</sup>* = exponentiated *B*.

\**p* < .05. \*\**p* < .01. \*\*\**p* < .001 (two-tailed tests).

work spent significantly less time awake with their father on a weekend day but significantly more time with their father on a weekday than did infants who had a father working Monday through Friday. Hours a father was with an infant on a weekend day were also negatively related to regular evening or night employment, though we did not observe this association on weekdays. One possible explanation for this is that fathers who worked evening or night work needed to sleep during daylight hours on a weekend, which reduced contact with children. Fathers' weekly income was negatively associated with infants' time with a father near on a weekday but positively associated with infants' time with a father on a weekend day. Our results suggest that fathers did not take on a greater caregiving load when mothers were devoting time to paid employment or a family business. In models for both weekdays and weekend days, the coefficient for mothers' employment was not statistically significant.

In contrast, we observed that mothers' employment was significantly associated with the likelihood an infant spent more than 1 hour awake with only the father, relative to no time, on both a weekday and weekend day (results not shown but available on request). On a weekday, infants who had a mother employed and not on leave were 66% more likely to have received sole father care for more than 1 hour. The likelihood an infant was in sole father care for more than 1 hour significantly declined as fathers' hours in

employment increased, but only on weekdays. On average, the odds an infant spent more than 1 hour in sole father care declined by 2% for each additional hour of employment. We also found a significant, negative relationship between the odds an infant received more than 1 hour of sole father care and fathers' weekly income on weekdays. Neither fathers' working hours nor income were significantly associated with the likelihood an infant spent less than 30 min in sole father care or 30–60 min in sole father care (relative to no sole father care). On the weekend, we observed that infants whose father worked weekends on a regular or irregular basis were significantly less likely to have spent more than 1 hour in sole father care than infants whose father worked Monday through Friday.

Few of our explanatory variables significantly predicted of the likelihood an infant received personal care solely from their father. On a weekday, only fathers' working hours were significantly associated with our third dependent variable. The odds that an infant received personal care were found to decline by 6.5% as fathers' hours in employment increased by 5 hours. On a weekend day, only parents' relationship status was significantly associated with the likelihood an infant received personal care solely from the father. Infants who had cohabiting parents were 25% less likely to have received personal care solely from the father than infants who had married parents.



## DISCUSSION

We believe that our findings add an important new dimension to understanding the relationship between fathers' leave taking and fathers' level of participation in child care. Although other studies have found that leave may provide the impetus for greater father involvement in helping out with specific childcare activities, our results indicate that fathers' leave does not lead to a comprehensive change in paternal involvement in the care of a young child. Our findings provide only limited support for the view that fathers' leave taking at the time of the birth of a child is related to increased involvement of fathers in the care of the child.

Specifically, our results show that those infants whose fathers took 4 weeks' leave or longer spend no more time with their father than do infants whose fathers took a shorter leave or no leave. Yet we did find a positive association between leave and sole father care on weekends. Overall, fathers spend twice as much time caring for their infants on weekends than on weekdays, and there is evidence that infants whose fathers took at least 2 weeks' leave at the time of the birth were significantly more likely to receive more than 1 hour of sole father care on a weekend than were infants whose fathers took no leave.

An implication of the results is that employment responsibilities tightly circumscribe fathers' time with children. Our findings in relation to hours of employment further reinforce this. The negative relationship between fathers' hours of employment and father involvement on weekdays indicates that time spent in paid employment limits available time to spend with children. In addition, infants who have a father regularly involved in weekend job-related work spend significantly less time awake with their father on a weekend day but significantly more time with their father on a weekday than do infants who have a father in regular employment only on weekdays. Again, this suggests that employment places severe constraints on men's time with infants.

Our findings contrast with recent studies carried out in the United States, United Kingdom, and Sweden, where a stronger relationship between fathers' leave at the time of the birth and involvement in the care of infants has been observed. There are at least two possible explanations for this discrepancy, one relating to measurement differences and the other concerning cultural or social differences. Relative to

earlier studies, we adopt a different, and more comprehensive, measure of father involvement in child care. We examined the amount of time an infant had contact with the father and the amount of time that the father was the sole caregiver for the infant. In contrast, other studies have typically drawn on stylized questions of how often fathers undertake child-care tasks such as diapering, feeding, dressing, and bathing.

We believe that our measures may be more valid for three main reasons. First, time-diary data are typically a more accurate method of recording time spent on activities than self-report summary measures (Bianchi et al., 2006; Pleck & Masciadrelli, 2004). Second, our findings are less likely to be affected by reporting bias. Fathers who choose to take leave may place a greater value on being involved in parental care, and such values may mean that those fathers are more inclined to overestimate their contribution to child care in summary measures. Although mothers tend to report lower levels of father involvement on stylized questions than fathers themselves (Mikelson, 2008), it seems unlikely that the degree to which mothers underreport infants' time with fathers would be correlated with our key explanatory variable, fathers' duration of leave around an infant's birth. Third, we designed our measures to capture the extent that fathers' time replaces mothers' time on routine caregiving tasks. Summary self-report measures, in contrast, tend to measure the extent that fathers are involved in helping out but do not measure the extent of the reversal of the traditional gender division of child care labor. Although the willingness of fathers to help out suggests some change in the level of involvement of fathers in child care, we argue that the extent to which fathers are accessible to their child, particularly time spent in sole care of their child, is a more comprehensive indicator of fathers' level of involvement in child care. Thus, our findings do not necessarily contradict earlier studies, because fathers who take leave may more frequently help out with diaper changing, feeding, and bathing, without these contributions translating into a substantial reallocation of fathers' time or affecting the propensity of fathers to care solo for their children.

Time diaries do, however, have some drawbacks. These surveys are fairly demanding of respondents' time, which raises concerns that people with greater time constraints are less likely to respond. Consistent with this

expectation, we observed higher rates of diary nonresponse for families in which the mother was employed full-time. Yet diary nonresponse was also higher for couple families in which the mother had no tertiary qualification, and such women are less likely to be employed in Australia (Baxter, 2005). Taken together, we are not convinced that these contradictory patterns of nonresponse biased our regression analyses.

In addition, we lack precise information on father engagement in care when an infant has both the mother and father near. Further, measures of parental accessibility do not provide information on the intensity of care or quality of father-child interaction (Budig & Folbre, 2004). Although proximity is a functional prerequisite to father-child interaction, the relationship between children's contact with their father and their cognitive and emotional development is complex (Pleck & Masciadrelli, 2004). Future research drawing on other indicators of the quality of father care would be informative.

It is possible that cultural differences in the role of fathers in the family may explain some of the variations in findings between our results and studies in other countries. For example, compared to Sweden's social democratic framework, which promotes gender equality and supports women's independence from family caring obligations, Australia has a strong male breadwinner political and institutional framework that encourages and supports a traditional gender division of labor. Hence, even if fathers do take time away from paid work for parental leave, it may be much harder to translate that practice into sustained involvement in child care in the longer term.

Cultural differences in fatherhood are much less apparent, however, among Australia, the United States, and the United Kingdom. All three countries operate in a liberal welfare framework with a strong male breadwinner ideology, long full-time employment hours, and leave entitlements that are closely tied to labor market involvement. Yet even compared with their counterparts in other liberal welfare states, Australian mothers are far more likely to exit the labor force after a first birth than their counterparts in the United States or the United Kingdom, and when they do return, they are far more likely than U.S. mothers to return to part-time rather than full-time employment. This may encourage greater role specialization along traditional gender lines in the home, which again

suggests a more difficult translation of fathers' leave into longer term child-care involvement.

Two caveats should be noted. First, other forms of domestic work conducted on behalf of a dependent child, such as clothes washing and food preparation, do not require an infant to be near (Budig & Folbre, 2004). Fathers who take leave may increase their involvement in these activities. Second, in families with more than one dependent child, fathers who take leave may increase their involvement in the care of an older child or children. The experience of taking leave to care for an older sibling or siblings of a newborn child could modify fathers' involvement in forms of care particular to the needs of older children (e.g., helping with homework, reading). Time-diary records of fathers' activities over the course of a weekday and weekend day might further shed light on these two possibilities, though one difficulty is that the instruments usually do not ask parents to identify whether care is provided to all dependent children or to a specific child across a particular time interval (Folbre & Yoon, 2007).

More generally, the extent that taking leave at the time of an infant's birth influences the negotiation of subsequent care of the child is likely to be dependent on the level of cultural, institutional, and workplace support for men's involvement in child care, as well as fathers' perceptions of what their contribution to caregiving should be. A number of studies have documented how family composition and workplace factors, including supervisor and coworker support, structure fathers' uptake of paternity leave (see O'Brien, 2009). In addition, smaller-scale studies exploring the reasons fathers give for taking leave have found that men emphasize the importance of bonding with a newborn child but tend not to view leave as a way to share parental care more equally with their partner (Bekkengen, 2005; Dermott, 2008). Further research is needed across different institutional contexts and among men with differing perceptions of, and levels of commitment to, fathering to unpack further the relationship between leave taking and fathers' levels of involvement in child care.

#### NOTE

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